

REMARKS

Applicants respectfully request favorable consideration and allowance of the pending claims.

I. Status of the Claims

Upon entry of this amendment, claims 1-2 and 6-35 remain pending. Claims 7-13 and 15-35 are withdrawn.

Claims 1, 6-9, 11-15, and 35 have been amended.

Claim 7 has been amended to make it independent by incorporating the requirements of its base claim 1. Claims 8 and 10 have been amended to make them depend from independent claim 7.

Claims 1, 6, 11-15, and 35 have been amended to require a minimum zinc concentration of 24 atomic %, with maximums of 70, 50, 35, and 30 atomic percents. Paragraph [0036] discloses several zinc concentration ranges, such as between 2 and 70 atomic percent, or between 5 and 50 atomic %, or between 5 and 35 atomic %. Paragraph [0037] discloses embodiments wherein the zinc concentration is between 10 and 30 atomic %. These disclosures support the maximum concentration ranges of the claims.

Multiple examples of Pt-Zn-Fe alloys that the inventors actually prepared provide support for the minimum zinc concentration of 24 atomic %. The following table lists the electrode numbers from Table B having zinc concentrations of at least 24 atomic %:

Electrode Number	Zinc concentration in atomic %
38	30.03
31	41.45
23	52.18
37	29.24
17	29.44
25	25.83

36	28.50
30	40.32
29	39.26
2	38.57
9	32.45
39	30.86
10	36.04
26	29.32
11	40.52
18	33.02
3	42.92
27	33.90
19	37.59
1	35.01
22	50.76
15	63.08
12	46.28
28	40.17
35	29.14

The following table lists the electrode numbers from Table C having zinc concentrations of at least 24 atomic %:

Electrode Number	Zinc concentration in atomic %
40	43.23
38	26.22
39	35.83
31	26.98
24	27.77
32	36.73
45	25.51
52	24.83
46	34.98
59	24.19
53	34.17
54	41.45
55	47.28
48	48.17
47	42.32
56	52.05
61	40.61
60	33.40
62	46.41
64	55.17
63	51.18

The present situation is on all fours with the situation in *In re Wertheim*, 541 F.2d 257; 191 USPQ 90 (CCPA 1976) in which the court held that a claim directed to a method of preparing an extract having from 35 to 60% solids content was supported by a specification disclosing an extract having from 25 to 60% solids content and two examples in which the extract had 36% and 50% solids content:

The function of the description requirement is to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him; how the specification accomplishes this is not material. *In re Smith*, 481 F.2d 910, 178 USPQ 620 (Cust. & Pat.App.1973), and cases cited therein. It is not necessary that the application describe the claim limitations exactly, *In re Lukach*, supra, but only so clearly that persons of ordinary skill in the art will recognize from the disclosure that appellants invented processes including those limitations. *In re Smythe*, 480 F.2d 1376, 1382, 178 USPQ 279, 284 (Cust & Pat.App.1973). 191 USPQ at 96.

In the context of this invention, in light of the description of the invention as employing solids contents within the range of 25-60% along with specific embodiments of 36% and 50%, we are of the opinion that, as a factual matter, person skilled in the art would consider processes employing a 35-60% solids content range to be part of appellants' invention and would be led by the Swiss disclosure so to conclude. Cf. *In re Ruschig*, supra. The PTO has done nothing more than to argue lack of literal support, which is not enough. If lack of literal support alone were enough to support a rejection under §112, then the statement of *In re Lukach*, supra, 442 F.2d at 969, 58 CCPA at 1235, 169 USPQ at 796, that "the invention claimed does not have to be described in *ipsis verbis* in order to satisfy the description requirement of § 112," is empty verbiage. The burden of showing that the claimed invention is not described in the specification rests on the PTO in the first instance, and it is up to the PTO to

give reasons why a description not in *ipsis verbis* is insufficient. 191 USPQ at 98.

Just as "35 to 60%" in *Wertheim* was supported by an *ipsis verbis* range of 25-60% and two examples of 36 and 50%; here the claimed zinc ranges between about 24 atomic percent and 70, 50, 35, or 30 atomic percent are supported by the above listed 46 examples in which the zinc concentration ranged from 24.19 atomic percent to 63.08 atomic % and by *ipsis verbis* ranges of between 2 and 70 atomic percent, between 5 and 50 atomic %, between 5 and 35 atomic %, between 10 and 30 atomic %.

II. Claim Rejections Under 35 U.S.C. §§102(b)/103(a)

Reconsideration is requested of the rejection of claims 1, 2, 6, and 14 as being anticipated by or obvious in view of JP 52084193 by Ichikawa and by U.S. 4,100,180 also by Ichikawa et al.

Claim 1 is directed to an alloy for use as a catalyst in oxidation or reduction reactions, the alloy comprising:

- platinum at a concentration that is between about 10 and about 80 atomic percent,
- zinc at a concentration that is between about 24 atomic % and about 70 atomic %, and
- at least one of nickel and iron at a concentration that is between about 20 atomic % and about 80 atomic %.

The alloys, the components, and the component concentration ranges disclosed in both of the cited references are identical such that if the claims are patentable over one reference, they are patentable over both. The assignee of the applicants' present application is a Japanese corporation, and the assignee's in-house counsel, who is fluent in Japanese, has

reviewed the JP 52084193 reference and has confirmed that the alloy concentration ranges disclosed in the respective references are identical. For example, on page 490, upper-left column, lines 6-15 of JP 52084193 discloses a catalyst comprising:

- preferably 1.5 to 70% by weight, more preferably 1.5 to 50% by weight iron,
- 0.5 to 8 % by weight, more preferably 2.5 to 7% by weight zinc, and
- 22 to 98 % by weight, more preferably 43 to 96% by weight platinum.

This description in JP 52084193 describes the same alloy, components, and component concentration ranges as the description of column 3, lines 1-14 of US 4,100,180.

In order to fairly compare the concentration ranges in the Ichikawa et al. references against the concentration ranges in the claims, Ichikawa et al.'s concentration ranges must be converted from % by weight units to atomic % units. The following table shows the *broadest* possible concentration ranges of each element in the catalyst, stated in terms of *atomic* %, disclosed in each of the cited references:

Ranges Based on Broadest Disclosure

Element	Low (Atomic %)	High (Atomic %)
Iron	4.38	88.75
Zinc	0.54	19.96
Platinum	7.58	93.57

The preferred concentrations of the components of the alloy are stated to be 1.5 to 50 wt.% iron, 2.5 to 7 wt.% zinc, and 43 to 96 wt.% platinum. The broadest possible concentrations ranges, stated in terms of atomic %, of the preferred alloys of the Ichikawa references are set forth in the following table:

Ranges Based on Preferred Disclosure

Element	Low (Atomic %)	High (Atomic %)
Iron	4.45	76.06
Zinc	3.25	17.76
Platinum	18.03	88.32

The following table displays the concentrations of each component in terms for atomic % for each of Ichikawa et al.'s Examples 1-13 of the invention:

Compositions of Examples of the Invention

Example	Iron (atomic %)	Zinc (atomic %)	Platinum (atomic %)
1	7.16	14.27	78.57
2	7.72	14.21	78.06
3	12.35	13.49	74.16
4	7.52	12.85	79.63
5	4.59	13.84	81.57
6	69.66	6.83	23.51
7	13.11	13.63	73.26
8	8.47	6.17	85.36
9	31.83	2.04	66.13
10	30.54	6.19	63.27
11	29.31	10.15	60.54
12	7.16	14.27	78.57
13	7.16	14.27	78.57

With regard to the anticipation rejection against the pending claims, MPEP §2131 states:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). >"When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art." *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) (claim to a system for setting a computer clock to an offset time to address the Year 2000 (Y2K)

problem, applicable to records with year date data in "at least one of two-digit, three-digit, or four-digit" representations, was held anticipated by a system that offsets year dates in only two-digit formats). See also MPEP § 2131.02.< "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Anticipation is not established herein since claim 1 requires a minimum zinc concentration of 24 atomic %, while the maximum zinc concentration of the broadest range disclosed in the references is 19.96 atomic percent which neither touches nor is particularly close to the minimum zinc concentration required in the claim. See MPEP §2131.03 Part III. PRIOR ART WHICH TEACHES A VALUE OR RANGE THAT IS VERY CLOSE TO, BUT DOES NOT OVERLAP OR TOUCH, THE CLAIMED RANGE DOES NOT ANTICIPATE THE CLAIMED RANGE.

With regard to obviousness, MPEP §2143.03 states that "All Claim Limitations Must be Considered." To render claim 1 unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the Office must show that the Ichikawa et al. references disclose or suggest *each and every claim feature*. See *CFMT, Inc. v. Yieldup International Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974) (obviousness requires a suggestion of all limitations in a claim). A proper obviousness determination requires that the Office make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." See *In re Wada and Murphy*, Appeal 2007-3733 (January 14, 2008), citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in

original). Further, the Supreme Court held that obviousness is a question of law based on underlying factual inquiries, including ... ascertaining the differences between *the claimed invention* and the prior art. *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) (emphasis added). MPEP §904 instructs examiners that "The first search should cover the invention as described and claimed, including the inventive concepts toward which the claims appear to be directed."

In sum, it remains well-settled law that obviousness requires at least a suggestion of all of the features in a claim. See *In re Wada and Murphy*, citing *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) and *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

Moreover, MPEP §2144.05 Part III. states:

A *prima facie* case of obviousness may also be rebutted by showing that the art, **in any material respect**, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997)...

Herein, the Ichikawa et al. references fail to disclose or suggest all of the features of claim 1. In particular, for the reasons stated above, the Ichikawa et al. reference fail to disclose or suggest any catalyst alloy having the claimed zinc concentration. Moreover, the prior art materially teaches away from the claimed zinc concentration of between 24 atomic % and 70, 50, 35, or 30 atomic % since the maximum zinc concentration in the broadest range is substantially below the claimed minimum, and the reference specifically prefers even lower zinc concentrations since the maximum preferred zinc concentration of 17.76 atomic % is lower than the broadest disclosed maximum zinc concentration of 19.96 atomic %, and the highest zinc

concentration in any of the Examples of the Invention are still lower at only 14.27 atomic %.

Ichikawa et al. also prepared various Comparative Examples. The Comparative Examples are not considered part of the Ichikawa et al. invention, but the disclosure of Comparative Examples is potentially relevant to the patentability of the pending claims. The following table displays the concentrations of each component in terms for atomic % for each of Ichikawa et al.'s Comparative Examples 1-9:

Compositions of Comparative Examples

Example	Iron (atomic %)	Zinc (atomic %)	Platinum (atomic %)
Comparative 1	14.62	13.69	71.70
Comparative 2	1.38	0	98.62
Comparative 3	2.27	8.31	89.42
Comparative 4	3.20	9.03	87.76
Comparative 5	3.23	20.35	76.42
Comparative 6	10.06	22.53	67.41
Comparative 7	1.86	15.08	83.06
Comparative 8	4.74	25.25	70.01
Comparative 9	13.85	0	86.15

Only one Comparative Example in the Ichikawa et al. references has a zinc concentration above the applicants' claim minimum of 24 atomic %, but the Comparative Example 8 has an iron concentration of only 4.74 atomic %, which is significantly (75%!) less than the claimed minimum of 20 atomic %. Therefore, none of the Comparative Examples describes any alloy meeting all of the limitations of the claims. The failure to disclose any such alloy means that the Comparative Examples also fail to anticipate claim 1 or render such claim obvious. And since only one example, a comparative example pitched as being inferior, has >24 atomic % Zn, the reference teaches away from >24 atomic % Zn.

In view of the foregoing, the Ichikawa et al. references fail to anticipate or render obvious the alloy material defined by claim 1. Applicants therefore respectfully request the rejection be withdrawn.

Claims 2, 6, and 14 depend from claim 1 and are patentable for the same reasons as claim 1 and by virtue of the additional requirements therein.

Claim 14, in particular, is directed to an alloy comprising a concentration of platinum that is between about 40 and about 60 atomic percent, a concentration of zinc that is between about 24 and about 30 atomic percent, and a concentration of iron that is between about 25 and about 50 atomic percent. Claim 14 is patentable over the Ichikawa et al. references since the references disclose very broad ranges of platinum and iron concentrations, even for the preferred ranges. These broad ranges do not describe the narrow ranges required in claim 14 with sufficient specificity to be an anticipating disclosure with respect thereto. Moreover, the ordinarily skilled person would not have found any particular reason to employ Pt concentrations between 40 and 60 atomic % since none of the Example or Comparative Example alloys disclosed therein had a Pt concentration within the claim 14 range. Finally, the Ichikawa et al. references fail to disclose or suggest the minimum zinc concentration of 24 atomic %. In view thereof, claim 14 is not anticipated by and non-obvious over Ichikawa et al. for failure to disclose or suggest all of the claim limitations and further for teaching away from the minimum zinc concentration, for the reasons stated above.

CONCLUSION

Applicants do not believe that a fee is required for the filing of this response, as it is being submitted within the two month shortened statutory period for reply. Should applicants be incorrect, the Commissioner is hereby authorized to charge the necessary fee to Deposit Account No. 19-1345.

Respectfully submitted,

/paul fleischut/

Paul I. J. Fleischut, Reg. No. 35,513
SENNIGER POWERS LLP
100 North Broadway, 17th Floor
St. Louis, Missouri 63102
(314) 345-7000

PIF/NAK/mrt